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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,762	10/09/2001	Harry Dwyer	Dwyer 7-15	9476

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EXAMINER	
LANE, JOHN A	

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/975,762	DWYER ET AL.	
	Examiner	Art Unit	
	Jack A Lane	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is responsive to the amendment filed 05/10/04. Claims 1-30 are presented for examination. Any objections or rejections made in the previous office action not specifically repeated below are withdrawn.

2. The examiner requests, in response to this Office action, any reference(s) known to qualify as prior art under 35 U.S.C. sections 102 or 103 with respect to the instant claims. That is, any prior art (including any products for sale) similar to the instant claimed invention that could reasonably be used in a 102 or 103 rejection. This request does not require applicant to perform a search. This **request** is not intended to interfere with or go beyond that **required** under 37 C.F.R. 1.56 or 1.105. This request may be fulfilled by asking the attorney(s) of record handling prosecution and the inventor(s)/assignee for references qualifying as prior art. A simple statement that the query has been made and no prior art found is sufficient to fulfill the request. Otherwise, the fee and certification requirements of 37 CFR section 1.97 are waived for those documents submitted in reply to this request. This waiver extends only to those documents within the scope of this request under 37 CFR, section 1.105 that are included in the application's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this

request and any information disclosures beyond the scope of this request under 37 CFR section 1.105 are subject to the fee and certification requirements of 37 CFR section 1.97. In the event prior art documentation is submitted a discussion of relevant passages, figs. etc. is requested. **A response to this inquiry is greatly appreciated.**

The examiner also requests, in response to this Office action, support be shown for language added to the claims on amendment. That is, indicate support for newly added claim language by specifically pointing to page(s) and line no(s). in the specification and/or drawing figure(s). This will assist the examiner in prosecuting the application.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the

inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1, 10, 19 and 27, the claim language "wherein said one or more additional frames and said thrashed set are at the same memory hierarchical level as said cache" is not supported by the specification. The specification does not discuss hierarchical levels or layers.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 1, 10, 19 and 27 are rejected under 35 U.S.C. § 102(e) as being anticipated by Nakamura et al. (Pat. No. 2002/0099912).

The claimed "cache memory" corresponds to level 1 cache memory 23 shown in figure 1. The claimed "plurality of sets of cache frames" correspond to the set associative cache memory shown in figure 3. The claimed "thrashing detector" corresponds to circuitry including load address history table 5 (see

sections 0021, 0027). The claimed "selector for identifying one or more additional frames" corresponds to circuitry inherently found in Nakamura for selecting/accessing additional sets within cache assist buffer 9,12 and/or low-level cache memory 11.

In the Remarks filed 05/10/04, applicant argues:

> Applicant notes that Nakamura discloses an operation that can transfer line data which has caused thrashing from the cache assist buffer 12 that is a layer between the level 1 cache memory 23 and the low-level cache memory and main memory 11 (page 3 section 39).

and;

> Independent claims 1, 10, 19, and 27, as amended, require wherein said one or more additional frames and said thrashed set are at the same cache hierarchical level. It is noted that the "same memory hierarchical level" as said cache includes frames in the same cache or an equivalent memory hierarchical level.

In response, the examiner contends Nakamura's cache assist buffer 12 is essentially at the same hierarchical level as shown in figure 1. The cache assist buffer 12 is accessed in parallel with level-1 cache memory and substantially simultaneously. Both the level-1 cache memory and cache assist buffer 12 are checked for sought after data before lower level cache memory or main memory are accessed.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103 (a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103(a).

8. Claims 2-9, 11-18, 20-26 and 28-30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakamura et al. (Pat. No. 2002/0099912).

Nakamura teaches the invention substantially as claimed as discussed above in section 6. The examiner believes most, if-not-all, dependent claim features are taught by Nakamura et al. However, in the event a claim feature(s) is not expressly or inherently taught by the reference applicant should consider the claim feature(s) in light of the Official notification put forth below.

Official notice is taken of prior art caching devices teaching any claim feature not specifically discussed above. That is, any prior art (including that of record) teaching the more well known claim features commonly found in the dependent claims. The claim features, while part of the invention, appear to be well known and their relevance not essential to the main invention found in the

independent claim(s). Thus, a detailed discussion of the well known claim features is not warranted at this time. Because dependent claim features, such as, miss rates and miss counters (claims 11 and 12) improve cache performance, it would have been obvious to use well known cache memory circuitry with the cache device of Nakamura to improve cache performance. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention.

9. Applicant's arguments filed 05/10/04 have been fully considered but they are not deemed to be persuasive.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

11. A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Any response to this final action should be mailed to:
Box AF

Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office
PO Box 1450
Alexandria, VA 22313-1450
or faxed to:
(703) 872-9306, (for Official communications intended for entry)
Or:
(703) 872-9306, (for Non-Official or Draft communications, please label "Non-Official" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack A. Lane whose telephone number is 703 305-3818. The examiner can normally be reached on Mon-Fri from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 703 306-2903.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-3900.

JACK A. LANE
PRIMARY EXAMINER